

THIRTEENTH ANNUAL REPORT
OF
THE TRUSTEES
OF THE
MASSACHUSETTS
STATE SANATORIUM
AT RUTLAND.

NOVEMBER 30, 1903.



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OF THE

MASSACHUSETTS STATE SANATORIUM.

TRUSTEES.

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JEREMIAH SMITH, JR., <i>Chairman</i> ,	CAMBRIDGE.
ASHUR HYNEMAN,	BOSTON.
J. P. RAND, M.D., <i>Secretary</i> ,	WORCESTER.
A. C. GETCHELL, M.D.,	WORCESTER.

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EDWARD O. OTIS, M.D.,	BOSTON.

CONSULTING LARYNGOLOGIST.

A. C. GETCHELL, M.D.,	WORCESTER.
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RESIDENT OFFICERS.

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GEORGE N. LAPHAM, M.D.,	<i>Physician.</i>
JAMES A. LYON, M.D.,	<i>Physician.</i>
JOHN E. RUNNELLS, M.D.,	<i>Physician.</i>
HERBERT GAMMONS, M.D.,	<i>Interne.</i>
CLARENCE MURPHY,	<i>Laboratory Director.</i>

MARY E. THRASHER,	. . . . .	<i>Matron and Superintendent of Nurses.</i>
CHARLES E. CARROLL,	. . . . .	<i>Steward.</i>
ESTHER E. JOHANSSON,	. . . . .	<i>Bookkeeper.</i>
WALTER C. BROWN,	. . . . .	<i>Chief Engineer.</i>
FREDERICK H. DRURY,	. . . . .	<i>Farmer.</i>

The Commonwealth of Massachusetts.

TRUSTEES' REPORT.

To His Excellency the Governor of the Commonwealth and to the Honorable Council.

The trustees of the Massachusetts State Sanatorium present their thirteenth annual report. This is the last report which the trustees will present. Within a few months the three new sanatoria, provided by chapter 474 of the Acts of 1907, will be ready to receive patients, and upon their completion the management of the Rutland sanatorium is to be transferred to the Board created by this act, and the trustees of the institution at Rutland have no further duties to perform.

The act providing for the construction of the Rutland sanatorium did not prescribe any policy to be followed in the admission of patients, but left this matter entirely to the judgment of the trustees. As the institution could not accommodate all tuberculous cases in the State the trustees adopted the policy of first admitting cases in the incipient stages of the disease, and of taking the more advanced cases only when there were not sufficient incipient cases applying to fill the sanatorium. This policy was based upon the idea that as it was necessary to adopt some principle of selection it would be better in the end to take the curable cases first. As there have always been more applicants for admission than there were beds in the sanatorium it became inevitable that some applicants must be rejected, no matter what policy in regard to admissions was adopted, and there has been some complaint from physicians and others whose patients and friends have not been admitted because of the advanced stage of their disease. The policy adopted at the opening of the institution has now been in force for the greater part of eleven years, and the trustees are of the opinion

that on the whole it has resulted in the greatest good to the greatest number.

The only change in this policy has been that created by chapter 222 of the Acts of 1907, requiring preference to be given to citizens of Massachusetts. This act has produced results which can hardly have been foreseen. We have been obliged to refuse admission to many persons who have been residents of Massachusetts for a number of years but who do not happen to be citizens. During the last year 197 persons, otherwise qualified for admission, have been postponed until there were no citizen applicants, and of all this number only 8 were ultimately admitted. Especial hardship has been caused in cases of unmarried women who, though residents of the State for many years and citizens for all practical purposes, have never been naturalized. We recommend the repeal of the act, or, if preferences are considered desirable, its amendment so as to limit the preference to those who have been residents of Massachusetts for two years.

During the year Mr. W. E. Parkhurst and Mrs. B. B. Russell resigned from the Board. Mr. Parkhurst had served since 1897 and Mrs. Russell since 1905. They have rendered very valuable service, and the other members of the Board regret their resignation exceedingly. As the Board goes out of existence so shortly no appointments have been made to fill these vacancies.

Dr. P. Challis Bartlett resigned in February as assistant physician to become superintendent of the New Hampshire State Sanatorium, and Dr. John E. Runnells has resigned to accept the position of first assistant at the new Lakeville State Sanatorium. We regret to lose two valuable members of our staff. Dr. James A. Lyon, from the Loomis Sanatorium at Liberty, N. Y., has been appointed an assistant physician, and Dr. Herbert Gammons, a graduate of the Boston University School of Medicine, has been appointed to assist Dr. Lapham as interne. Miss Ethel Heald has resigned as dietitian, and her place has not been filled, as the superintendent desires to see if the present staff cannot, through a rearrangement of duties, do the work formerly performed by the dietitian.

The new cow barn, for which an appropriation was made

in 1908, has been completed, and cows have been purchased under the Resolves of 1909.

The contract for the nurses' home, authorized by the Resolves of 1909, has been let to James Miles & Son of Worcester for \$11,802, exclusive of heating, electric wiring and sewer connection, and it is expected that it will be completed and opened in February. The filter beds have been increased one-third in capacity, and upon relaying a part of the pipe, as recommended by the State Board of Health, and for which a special appropriation is asked, will be of sufficient capacity to properly care for the sewage.

A training school for nurses has been established in order that the present "attendants" may become nurses. A schedule of study has been arranged, which is given at length in the report of the superintendent.

The estimates for the coming year, all of which have been approved by the State Board of Charity, are as follows: —

For maintenance,	\$184,000 00
For special appropriations: —	
New horse barn (cement),	\$8,500 00
New dynamo engine and foundations,	4,840 00
Iron sewer pipe,	1,975 00
Repairing road (within grounds),	1,000 00
Additional fire protection,	400 00
	<hr/>
	\$16,715 00

The estimated expense for maintenance is \$3,000 less than the appropriation for last year and \$1,000 less than the appropriation for 1908. The reduction is due principally to the fact that no extraordinary repairs are necessary. The regular maintenance appropriation last year included certain extraordinary repairs which had previously been provided for through special appropriations, and if these are included in the cost of maintenance the per capita cost during the past year has been \$10.42 per week; if these amounts are excluded, and the per capita cost computed on the basis used during the last eleven years, the per capita cost has been \$10.20 per week. These costs compare favorably with the cost of maintenance at other similar institutions.

The special appropriations asked for are all matters of necessity. The present barn is an old wooden building, in great need of extensive repairs which cannot be economically made. A new horse barn will complete the entire new group of farm buildings, and the old barn can then be taken down, as recommended several years ago by Olmsted Brothers in their report laying out a plan for future improvements.

The sanatorium has its own electrical plant, and there has been no increase in the equipment for a considerable time, during which the institution has been largely increased in size. The present equipment is constantly overloaded, and we have no reserve unit, so that a new dynamo and engine are matters of absolute necessity.

For some years we have had much trouble with the overflowing of the filter beds, which were designed for an institution half the size of the present one. We requested the State Board of Health to recommend the necessary changes, and after investigation they reported that a large part of the trouble was caused by leakage from our sewer pipe, which is more than a mile in length, and recommended that a part of this be relaid with iron pipe. A copy of their opinion appears in the report of the superintendent.

Additional fire protection is needed for the new nurses' home and farm buildings.

The road within the grounds of the institution has been badly washed out during the last few years, and if not repaired will become dangerous.

In making their last report the Board desire to put on record their appreciation of the faithful, loyal and efficient work performed by the superintendent, the staff and all the employees of the sanatorium, which they believe is now in a high state of efficiency.

SYLVIA B. KNOWLTON.

JEREMIAH SMITH, JR.

ASHUR HYNEMAN.

JOHN PRENTICE RAND.

ALBERT C. GETCHELL.

SUPERINTENDENT'S REPORT.

To the Trustees of the Massachusetts State Sanatorium.

LADIES AND GENTLEMEN: — I have the honor to submit the following report for the year ending Nov. 30, 1909.

There were present in the sanatorium at the beginning of the year, Dec. 1, 1908, 347 patients, of whom 189 were men and 158 were women. During the year 411 men and 372 women, a total of 783 patients, were admitted. The discharges numbered 784, of whom 416 were men and 368 were women. Included in the latter item are 11 deaths (9 men and 2 women). On the 30th of November, 1909, there were remaining in the sanatorium 346 patients, 184 men and 162 women. The daily average number of patients was 341, which is 2 more than last year, and which also is the highest number during the eleven years since the opening of the sanatorium.

APPLICATIONS FOR ADMISSION.

There were 2,015 new applicants examined for admission. Of this number, 584 were accepted, 591 not accepted and 840 deferred. There were 505 re-examinations of applicants who had formerly been deferred or "not accepted" upon the first examination. Of these, 140 were accepted upon second or subsequent examination, 157 not accepted and 208 again deferred. The total number of examinations was 2,520. Of this number, 1,678, or 66.5 per cent., were examined at the Boston office. The number of examinations made at Worcester, Fall River and Pittsfield has increased considerably over that of previous years. At the Worcester City Hospital 184 examinations were made, at Fall River 132 and at Pittsfield 59. The number of applicants examined at the Lowell office was 89, at Springfield 71, at Northampton 42, at Greenfield 15 and at the Worcester Hahnemann Hospital 3.

RESIDENCE.

The counties of Suffolk and Middlesex furnished 47.6 per cent. of the total number admitted during the year. The number of admissions from Suffolk County was 251, or 32 per cent. This is a slight decrease over previous years, due to a diminished number of applicants from Boston since the opening of the Boston Consumptives Hospital. At the present time the Boston cases average about 30 per cent. of the admissions, a decrease of about 7 per cent. from the usual yearly average.

The admissions from the other counties of the State were divided as follows: from Middlesex, 15.7 per cent.; Essex, 10.9 per cent.; Worcester, 15.7 per cent.; Bristol, 7.9 per cent.; Plymouth, 4.7 per cent.; Norfolk, 2.4 per cent.; Berkshire, 3.5 per cent., and Hampden, 3.5 per cent.

NATIVITY.

An examination into the nativity of those admitted shows that 555, or nearly 71 per cent., were born in the United States. Of the foreign born, 26.7 per cent. were born in the Canadian Provinces, 24 per cent. in Ireland, 20.6 per cent. in Russia, 7 per cent. in England and 7.4 per cent. in Sweden.

Of those born in America of foreign parentage the paternal ancestry was Irish in 48 per cent., Canadian in 22 per cent., English in 10.7 per cent. and German in 7 per cent.

During the year 443 applicants — 248 men and 195 women — were not naturalized citizens, and of this number, 197 were cases suitable for admission but deferred, in accordance with the provisions of chapter 222 of the Acts of 1907, until there should not be a sufficient number of citizens applying to fill the beds. We were able to admit but 8 of this number. Many of these applicants had been residents of Massachusetts for several years. This law seems to be a particular hardship in the case of young women who develop tuberculosis after a few years' residence in the State, to which they have come with the intention of remaining permanently, but who seldom if ever take out naturalization papers.

I believe that the repeal of this act, or its amendment so

as to limit the preference to those who have been residents of Massachusetts for two years, would work to the better advantage of all, and would enable us to accept practically all suitable applicants.

AGE.

The average age of all patients admitted during the year was twenty-six years and nine months. The age was under twenty in 18.5 per cent. and between twenty and thirty years in 42.5 per cent. The age was under thirty years in 59 per cent. of the men admitted, and in 62 per cent. of the women. The number of children between the ages of fourteen and sixteen years, inclusive, was rather larger than usual, there being 26 girls and 15 boys between these ages admitted. A number of younger children were not accepted.

There is considerable need of a sanatorium school for children under the age of seventeen, so situated that the children would not be obliged to associate with adults, who might have an injurious influence upon them, and where school advantages could be combined with sanatorium care. Such a school could well be conducted in connection with and under the same administration as the Hospital Cottages for children at Baldwinsville, the situation and equipment of which are suitable for such an undertaking.

CIVIL CONDITION.

Over 55 per cent. of the admissions were of married people. The percentage of the married was higher among the men admitted than among the women, being 60 for the former and 51 for the latter.

OCCUPATION.

The occupation of the patients was an indoor one in 88 per cent. of the cases admitted. Of the women, 41.6 per cent. were housewives, 12 per cent. were in domestic service and 16 per cent. were mill or factory operatives. Of the men, 77 per cent. worked indoors, and of the indoor workers 29 per cent. were mill or factory operatives.

RESULTS OF TREATMENT.

The number of patients admitted this year was 27 less than last year, but the number of considered cases, that is, those remaining more than one month, was greater, so that the number of cases treated and upon which we can have statistics was 33 more than last year, or 652.

The average duration of sanatorium residence in these cases was six months and ten days, which is 12 days less than last year.

This year 203, or 31.13 per cent., of the cases were classified as incipient, 341, or 52.3 per cent., as moderately advanced, and 108, or 16.56 per cent., as far advanced. This shows a decrease of about 5 per cent. in the number of incipient cases under treatment.

All incipient cases applying, with the exception of the non-citizen applicants, are accepted at once, but there never are more than enough to fill one-third of the beds.

With all the active interest being taken in the stamping out of tuberculosis within recent years, both by the medical profession and the general public, it is surprising that there is not a more general recognition of the disease in its early stages and an increasing demand for admission of incipient cases. The reason for the falling off in the number of patients applying in the incipient stage is undoubtedly that these patients are being cared for at home, in the tuberculosis classes and clinics now conducted in many of the cities and larger towns of the State. Many patients remain at home for several weeks or months after the recognition of the disease, often without special supervision or treatment and continuing at work, until when they do apply for admission they are in the moderately advanced stage.

While the tuberculosis classes and other forms of home treatment do a great deal of good, have a very important field of usefulness and are very necessary agents in the anti-tuberculosis campaign, I still believe that the patients with incipient disease will, in the majority of cases, do better and receive more lasting benefit under sanatorium than under home, day camp or class care. The early case is the curable case, and should be

placed as soon as recognized under conditions most likely to effect an early and lasting cure or arrest of the disease. A change of environment and a systematic regulation of the daily life in all its details are of prime importance in these cases, and these conditions can be had more surely in the sanatorium than at home.

Of the incipient cases under treatment during the year, 61.57 per cent. were discharged as apparently cured, 25.61 per cent. as arrested, 10.83 per cent. as improved and 1.97 per cent. as not improved.

The average duration of residence of the incipient cases discharged as apparently cured or arrested was five months and one day.

There were 341 classified as moderately advanced, of whom 12.61 per cent. were apparently cured, 43.11 per cent. arrested, 32.84 per cent. improved and 11.43 per cent. not improved.

The far-advanced cases numbered 108, an increase of 31 over last year. None of these were discharged as apparently cured, but there was an arrest of the disease in 14.80 per cent. and improvement in 40.74 per cent., while 44.44 per cent. were not improved.

Taking all classes of cases together, 25.77 per cent. were apparently cured, 32.97 per cent. were arrested, 27.30 per cent. were improved and 13.95 per cent. not improved.

There were 11 deaths during the year. The causes of death and duration of residence are given in Table XII.

WEIGHT.

The weight records of 652 considered cases were as follows: the number who gained in weight was 595, — men, 313; women, 282. The average gain of the men was 15.1 pounds; average gain of the women, 14 pounds. The greatest gain of a man was 55 pounds and of a woman 35 pounds. There were 57 who lost weight, — 25 men losing an average of 7.2 pounds and 32 women losing an average of 3.1 pounds. The average gain in weight is the highest since 1902.

TUBERCLE BACILLI IN SPUTUM.

There had been no examination of sputum for tubercle bacilli before entrance in 52.6 per cent. of the patients admitted, and of those examined, 88, or 36.6 per cent., were negative, and 240, or 63.4 per cent., were positive. Tubercle bacilli were found in the sputum of 389, or 59.6 per cent., of all considered cases during their sanatorium residence. In 229 cases (35 per cent.) tubercle bacilli were not demonstrated after repeated examinations. Six men and 28 women had no sputum.

Tuberculin was used for diagnostic purposes in 24 cases, the cutaneous test in 17 and the subcutaneous in 7. The cutaneous reaction was positive with two exceptions, as was also the subcutaneous.

The therapeutic use of tuberculin was resorted to in 23 cases. Three of these were cases complicated with a tubercular inflammation of the iris and sclera, which improved under treatment. The remainder were cases which had been for some time under treatment and whose condition was stationary or retrogressive. One of these was discharged as apparently cured, 8 as arrested, 1 as improved, 6 as not improved and 4 are still under treatment. Bacillin emulsion or bouillon filtrate were the preparations used.

COMPLICATIONS.

A fairly complete record of complications has been made during the year and the most frequent of these are here given.

Hæmoptysis of some degree was noted in 109, or 16 per cent., of the cases. Hæmoptysis prior to entrance occurred in 274, or 42 per cent., of the considered cases.

Adenoids,	2	Diabetes,	1
Adenitis,	3	Enteritis, tubercular,	8
Adenitis, tubercular,	2	Furunculosis,	1
Appendicitis,	9	Eneurisis,	1
Anæmia, secondary,	2	Epilepsy,	1
Asthma,	3	Fistula in ano,	2
Abscess, ischio rectal,	3	Heart, mitral regurgitation,	4
Abscess, inguinal,	1	Iritis, traumatic,	1
Abscess, pulmonary,	1	Iritis, tubercular,	3

Insanity,	1	Pregnancy,	6
Keratitis, phlyctenular,	1	Pleurisy, fibrinous,	3
Keratitis, tubercular,	1	Pleurisy with effusion,	1
Laryngitis, catarrhal,	6	Otitis media,	3
Laryngitis, tubercular,	17	Rheumatism,	2
Laryngitis, syphilitic,	1	Tonsilitis,	4
Lupus, ankle,	1	Syphilis,	2
Miliary tuberculosis,	1	Tumor of brain,	1
Meningitis, tubercular,	1	Trichophytosis,	1
Neurasthenia,	4	Tachycardia,	2
Pneumonia, lobar,	2	Tachycardia, paroxysmal,	2
Pneumonia, tubercular,	1	Ulcer, stomach,	1
Pneumothorax,	5		

LABORATORY.

A large amount of work has been accomplished in the laboratory during the year. The routine sputum and urine analyses take a great deal of time, curtailing the amount of special work, for which there is a large demand upon the laboratory director. In spite of this, however, the laboratory is daily proving to be more and more indispensable to the medical service. The preparation of vaccines, with the accompanying cultural studies, has become an important part of the routine bacteriological work. Autogenous vaccines have been prepared in numerous cases, and during the past months considerable work has been done with the bacillus lacticus, which organism is supplied to the throat room in bouillon culture for nasal treatment and used for inoculation purposes in making buttermilk. A series of analyses of stomach contents, both chemical and microscopical, is being made, and it is hoped soon to have this sufficiently complete to form the basis for a report.

The work planned for last year upon the fat metabolism was begun in the spring, but was temporarily abandoned owing to the prolonged leave of absence granted to the director during the summer.

The following is a summary of the laboratory work of the past year: —

Sputum Examinations.

Positive,	1,776, or 33.95 per cent.
Negative,	3,454, or 68.04 per cent.
Total,	5,230

Classified: —

Few,	999, or 56.25 per cent.
Moderate,	488, or 27.48 per cent.
Many,	245, or 13.79 per cent.
Very many,	44, or 2.47 per cent.

Positive on first examination,	1,452, or 81.75 per cent.
Positive on second examination,	238, or 13.40 per cent.
Positive on third examination,	86, or 4.84 per cent.

Autogenous and stock vaccines have been prepared of the following organisms: staphylococcus pyrogenous albus, aureus, albus et aureus; streptococcus pyrogenous; pneumococcus and bacillus coli communis. Culture studies have been made of practically all discharging abscesses, sinuses, etc., and of all other cases where vaccines were applicable or information as to the character of the organisms desired. Preparation of Bulgarian buttermilk has been carried out, and bouillon culture of bacillus lacticus furnished for treatment in nasal cases. The opsonic index has been determined in a few cases in connection with the preparation of vaccines. Examinations of blood according to the Rosenberger method were made in 7 cases. The findings were negative in 4 cases and in 3 acid-alcohol-resisting bacilli were found morphologically consistent with the tubercle bacillus, but in all 3 cases guinea-pig inoculations were negative. Further work along this line was not done, owing to the uniformly negative findings of other laboratory workers.

Tubercle bacilli were found in large numbers in the urinary sediment in two cases, in the spinal fluid in 1 case and in the feces in 5 cases.

The work in the chemical laboratory included the gravimetric analysis of urine for total solids, albumen, chlorides, and in a few cases for heavy metals; of milk and cream for total solids, and of feces for fat; the volumetric analysis of urine for nitrogen and for dextrose; the indican determination in over 700 cases; weekly milk and cream analyses by means of Feser's lactoscopic and specific gravity method, and monthly milk analysis from each source of the sanatorium supply. Chemical analyses of the gastric contents following removal

after a test meal were made in 32 cases, with the following findings: decreased acidity in 24, or 75 per cent.; minus acidity, 1, or 3.12 per cent.; increased acidity in 4, or 12.5 per cent.; normal in 3, or 9.3 per cent. Tubercle bacilli were demonstrated in 17, or 53.13 per cent. Guinea-pig inoculations to determine the pathogenic activity of the tubercle bacilli have already been carried out in 3 of these cases, and a further series of both animal inoculation, chemical and microscopical examinations is under way.

MEDICAL VISITORS.

The invitation extended last year to medical visitors has been accepted by several, and it is hoped that more of the physicians of the State will visit the sanatorium during the coming year, to remain a day or longer, as their time may permit, to become familiar with the work of the sanatorium and to avail themselves of its clinical advantages. Several medical organizations have held meetings with us during the last year, and we trust we may have them and others with us in the future.

IMPROVEMENTS.

During the summer we completed the removal of the stucco and wire lath on the outside walls of the original group of buildings. The old material has now been everywhere replaced, except on the west side of ward A, where it has remained intact and as yet shows no signs of decay.

The main corridor floors have been relaid with maple flooring. Considerable work has been done in grading about the women's wards.

The operating room in the infirmary was finished early in the year and has many times proved its value.

The new cow barn was completed and has been in use since July 1.

The hennery has been enlarged and stocked to its present capacity of 1,200 fowls.

Good progress has been made in the construction of the nurses' home, for which an appropriation was granted at the last session of the Legislature, and the building will be ready

for occupancy early in the year. On account of the sewer connection it was found necessary to raise this building eighteen inches above the grade originally planned, thus necessitating a corresponding elevation of the roadway passing in front of the building, across which it was necessary to carry the sewer line. This will necessitate a much larger amount of filling and grading than was expected.

Work is now progressing on the construction of sleeping porches along the corridors between wards M and A and wards D and L. The old verandas on the original buildings are being rebuilt, having become unsafe from decay.

IMPROVEMENTS DESIRED.

The electric lighting plant is inadequate for the work which it is now called upon to perform, and with the completion of the nurses' home there will be an increased demand upon it. We are using one 75-kilowatt generator and two 25-kilowatt generators, which were installed at the time the institution was opened. We cannot run the large generator with either one or both of the small ones, and are dependent upon the large generator alone, which is already overtaxed, for carrying the main load. In case of accident we have no reserve sufficient to light the buildings properly. We should have another unit, consisting of a 150-kilowatt dynamo and engine, for the purchase and installation of which \$5,000 is required.

At your request I communicated with the State Board of Health last spring, asking for advice relative to maintenance of the sewage-disposal system at the sanatorium, and received the following reply under date of May 6, 1909:—

To the Board of Trustees of the State Sanatorium, Rutland, Mass.

GENTLEMEN:—In response to your request for a further examination of the sewage-disposal system at the sanatorium at Rutland, and advice as to the construction of an additional area of filters, amounting to about .36 of an acre, which, with the filters already constructed, would make the total filtration area about 1.4 acres, the Board has caused a further examination of the locality to be made by one of its engineers and has caused observations to be made of the flow of sewage at various points between the institution and the present filtration area.

These observations were made on March 23 and April 16, the former in a comparatively dry period, at a time when the ground was frozen and no rain had fallen for several days, and the latter on the day following a very heavy rain.

The sewage from the buildings is collected into a flush tank, which discharges automatically several times during the day, and on each of the days when observations of the flow were made the quantity of sewage entering the sewer from the institution was found to be between 60,000 and 65,000 gallons per day. The quantity of sewage discharged at the filtration area, on the other hand, when no sewage was being discharged from the flush tank, was found to be, on March 23, 12,000 gallons per day, and that quantity evidently represents the amount of ground water entering the main sewer at that time between the flush tank and the filtration area. At the time of the observations made in April, the quantity of water flowing in the sewer at the manhole 1,900 feet above the upper end of the inverted siphon, when no sewage was passing the flush tank, was between 8,000 and 9,000 gallons per twenty-four hours, and this quantity probably represents the leakage into the portion of the sewer between the flush tank and this manhole at the time when the leakage is greatest. At the next manhole further down the sewer, and about 1,300 feet above the head of the siphon, the flow had increased to 56,300 gallons per twenty-four hours when no sewage was passing the flush tank, and at the filtration area the flow at that time was at a rate of a little over 100,000 gallons per twenty-four hours.

The sewer throughout most of the 1,900 feet next above the inverted siphon is laid through wet and marshy land, and the great quantity of ground water leaking into the sewer evidently enters it through the joints of the pipes and the interstices of the brickwork, of which the manholes are constructed.

The filter beds now in use have an area of approximately 1 acre, and with the additional filter beds which it is now proposed to construct the total area would be about 1.4 acres. In the opinion of the Board, this area would be entirely inadequate to purify properly all of the sewage of the institution, increased, as it now is, by the great quantity of leakage which finds its way into the main sewer at times of wet weather.

The only practicable plan of preventing this excessive leakage is to reconstruct the main sewer throughout the 1,900 feet above the upper end of the inverted siphon, using iron pipe with lead joints in place of the ordinary sewer pipe now in use, and to reconstruct the manholes on this portion of the sewer and make them water-tight. When the leakage has been eliminated, the quantity of sewage to be disposed of, including leakage, will apparently be about 70,000 gallons per day. This quantity is somewhat larger than was indicated in the

investigations of last year, and in order to purify it properly at all times, it will be advisable, in the opinion of the Board, to construct the additional filter beds now proposed. With this additional area the filters will be capable of purifying all of the sewage of the institution until the quantity has increased considerably beyond the amount now being discharged therefrom.

The area of land in the neighborhood of your present filter beds, containing soil well suited to the purification of sewage, is very limited, and it is desirable to reduce the quantity of sewage to be disposed of to the smallest practicable amount.

The Board recommends that the construction of the additional filter beds and the reconstruction of the main sewer, including the manholes thereon, for a distance of 1,900 feet above the inverted siphon be carried out as soon as the weather conditions become favorable for this work.

By order of the Board,

MARK W. RICHARDSON, M.D., *Secretary*.

To carry out the recommendation of the Board we have enlarged the filter area by the construction of two new beds, having an area of 16,000 square feet.

We have obtained estimates for the relaying of the pipe line as recommended, and should ask for an appropriation of \$1,975 for this purpose. When the pipe line has been rebuilt, thus eliminating the surface water now reaching the beds, and the old beds resurfaced, the plant should be adequate to meet the demands made upon it.

A fire hydrant should be located between the infirmary and the nurses' home and additional hose and fire extinguishers purchased, for all of which an appropriation of \$400 is needed.

We are much in need of a new horse barn to replace the old barn, from which the cows have been removed, but which it is still necessary to use for horses. Carriage room and sheds for the proper housing of farm wagons and implements are also needed. The old barn is badly out of repair, but contains good timber which can be used to advantage in building another barn for the above uses upon a site near the new cow barn and farmhouse, thus enabling us to remove the present unsightly buildings from the front of the sanatorium. Plans and estimates have been obtained for the construction of a suitable barn for \$7,000 in wood or \$8,500 in cement.

The main road across the sanatorium grounds needs resurfacing throughout and rebuilding in part, at a cost which has been estimated by an engineer from the office of the State Highway Commission at \$1,400.

TRAINING SCHOOL FOR ATTENDANTS.

It is proposed with the beginning of another year to inaugurate a training school for attendants. The sanatorium offers an excellent field for young women, untrained in the care of patients with tuberculosis, to receive instruction calculated to fit them for this service. We have planned a two years' course of instruction, consisting of lectures, recitations, bedside instruction, demonstrations, etc., covering the ground outlined in the following schedule: —

SCHEDULE FOR A TWO YEARS' COURSE.

First Year.

The ethics of nursing.
Anatomy and physiology to nervous system.
Principles of bacteriology.
Hygiene, personal and public.
Housekeeping.
Food, dietetics and cooking.
Bedside instruction.
Nursing, general and special.
Observation and symptoms.
Weights and measures.

Second Year.

Anatomy and physiology, nervous system and special senses.
Administration of medicine.
The more common medical and surgical diseases.
Contagious diseases.
Pulmonary diseases, especially tubercular.
Technic of aseptic surgery.
Nursing, general and special, in cases of tuberculosis.
Lectures of one-half hour duration to be given on the above subjects by members of the staff twice each week, one to each class.
Practical work to be given by superintendent of nurses.
Quiz weekly and examination twice a year.

TEXT-BOOKS.

McIsaac's "Primary Nursing Technique."

Stacy's "Practical Points in Nursing."

Otis's "Great White Plague."

SCHEDULES OF PRACTICAL WORK.

(To be taught, if possible, by demonstration.)

Housekeeping.

Care, airing and cleaning of bedstead, mattress, blankets and bed linen.

Care of cupboards and medicine closets.

Care of serving rooms, refrigerators, water coolers, closets, sinks, garbage pails.

Use and care of disinfectants and other poisonous ward solutions.

Care of rubber goods, — air beds, sheets, hot-water bags, ice caps, enema tubes, catheters, rubber rings, etc.

Care of basins, sputum cups, spittoons, bedpans, urinals, and all other metal and porcelain articles.

Economical use of supplies.

General Nursing.

Reception of patient; undressing patient and bath; care of clothing and valuables.

Making go-back bed. Open bed for patient at night.

Toilet and bath of patient in bed; washing hair, care of mouth, hands and feet.

Changing of bedding and clothing of patient in bed.

Sitting patient up in bed; getting patient out of bed.

Care of the back and other parts exposed to pressure.

Use of bedpan and urinal, back rests, rings, hot-water bags, etc.

Preparation of patient for various physical examinations.

Serving food to patients in bed; feeding helpless patients.

Giving enemata, — purgative, nutrient and stimulating.

Subcutaneous injections of drugs and normal salt solutions.

Use and care of catheter; washing out the bladder.

Giving various douches.

Washing out the stomach.

Making and application of poultices, fomentations, stupes, mustard pastes, etc.

Application of ointments, liniments, etc.

Application of dry cups, blisters and leeches.

Aspirating needles and apparatus.

Administration of oxygen, ether and chloroform.

Giving hot-air bath to patient in bed.

Collection and preparation of specimens of excreta for the laboratory.

Taking and recording pulse, blood pressure, temperature and respiration.

Observation of symptoms with bedside instruction.

Daily record of patient.

Special care of the dying.

Evidences of death.

Surgical Nursing.

Cleaning and disinfection of the operating room.

Making bandages, tampons, sponges, etc.

Sterilization and care of surgical dressings.

Making ether bed.

Preparations for surgical operation (demonstration when actual cases are not available): —

(a) Patient, — bowels, bladder, skin, for anæsthesia, etc.

(b) Operating room.

(c) Instruments and dressings.

(d) Solutions.

(e) Personal preparations, — hands, costume, etc.

(f) Anæsthetist's articles.

(g) Bed and clothing of the patient.

Assisting at surgical operations.

Assisting at surgical dressings.

Surgical emergencies.

Splints and Bandaging.

Review of tables of weights and measures.

Review of abbreviations and signs used in prescriptions.

Practice in the use of weights and measures.

Making percentage solutions.

Dispensing definite doses from solutions of known strength.

The recognition, doses, and effects of some of the drugs in common use.

Different classes of drugs.

Different preparations and methods of administration.

Poisons and their antidotes.

RUTLAND JOURNAL.

In March we began the publication of a monthly paper, the "Rutland Journal," for distribution among the patients in the sanatorium, ex-patients who desire to keep in touch with the work, and the physicians and charity workers throughout

the State. The journal is proving of much interest, not only to those in the sanatorium but to persons interested in tuberculosis work in various parts of the State, and I trust it will prove of increasing value to the institution.

MEDICAL SERVICE.

In February Dr. P. Challis Bartlett resigned to accept the position of superintendent of the New Hampshire State Sanatorium at Glen Cliff, N. H. Dr. Bartlett's long hospital training, skill and tact as a medical officer made us deeply regret his departure. We wish him success in this new field. He was succeeded by Dr. James A. Lyon, formerly on the staff of the Loomis Sanatorium, Liberty, N. Y.

Dr. John E. Runnells, who has been connected with the sanatorium over three years as interne and as assistant physician, has been appointed first assistant physician at the Lakeville State Sanatorium, and severs his connection with us on the opening of that institution. Dr. Runnells has had an experience well qualifying him for this important position, and the new sanatorium will gain a most valuable officer by his promotion.

Dr. Ernest P. Bixby served as interne from January to June, and Dr. Gaius Harmon from June to October, when he was succeeded by Dr. Herbert Gammons.

Miss Ethel Heald, who has rendered most efficient service as dietitian during the year, has presented her resignation, to take effect December 1.

We are again indebted to the many friends who have so generously remembered us with books, magazines, clothing and other articles for the amusement and comfort of the patients.

I wish to express my appreciation also of the efforts made so successfully by many of the patients and ex-patients, some of whom are now employed in the sanatorium, toward the entertainment and for the contentment of their sanatorium associates. Few not intimately connected with the work realize the spirit of helpfulness and encouragement to others which is so universal among the residents here. Through their efforts an excellent organ has been purchased for the Assembly Hall, and

they have contributed much both of their talents as entertainers and of substantial assistance in many ways for the welfare of those in need.

I am indebted to the medical staff, officers and employees for loyal support, and commend them most heartily for their zeal in working for the interests of the institution.

I would acknowledge also my personal obligation to your honorable Board for valuable advice, assistance and encouragement throughout the year.

Respectfully submitted,

FREDERICK L. HILLS,

Superintendent.

TREASURER'S REPORT.

To the Trustees of the Massachusetts State Sanatorium.

I respectfully submit the following report of the finances of this institution for the fiscal year ending Nov. 30, 1909:—

CASH ACCOUNT.	
Balance Dec. 1, 1908,	\$1,417 58
<i>Receipts.</i>	
<i>Institution Receipts.</i>	
Board of inmates:—	
Private,	\$42,747 19
Charitable associations,	2,428 98
Cities and towns,	5,171 29
State aid,	472 43
	\$50,819 89
Salaries, wages and labor:—	
Wages not called for,	47 45
Sales:—	
Food,	\$311 82
Clothing and materials,	12 00
Furnishings,	4 57
Miscellaneous,	3,396 33
	3,724 72
Farm, stable and grounds:—	
Pigs and hogs,	2,360 08
Miscellaneous receipts:—	
Interest on bank balances,	128 37
	57,080 51
<i>Receipts from Treasury of Commonwealth.</i>	
Maintenance appropriations:—	
Balance of 1908,	\$12,744 43
Advance money,	9,500 00
Approved schedules of 1909,	170,635 33
	192,879 76
Special appropriations,	16,164 25
Total,	\$267,542 10
<i>Payments.</i>	
To treasury of Commonwealth, institution receipts,	\$57,080 51
Maintenance appropriations:—	
Balance November schedule, 1908,	14,162 01
Eleven months' schedules, 1908,	170,635 33
November advances,	5,104 56
	246,982 41
Amount carried forward,	\$246,982 41

<i>Amount brought forward,</i>			\$246,982 41
Special appropriations: —			
Approved schedules,	\$16,164 25		
November advances,	119 15		
			16,283 40
Balance Nov. 30, 1909: —			
In bank,	\$3,116 04		
In office,	1,160 25		
			4,276 29
Total,			\$267,542 10

MAINTENANCE.

Appropriation,	\$187,000 00
Expenses (as analyzed below),	186,709 27
Balance reverting to treasury of Commonwealth,	\$290 73

Analysis of Expenses.

Salaries, wages and labor: —		
General administration,	\$36,076 47	
Medical service,	4,045 78	
Ward service (male),	1,217 45	
Ward service (female),	5,829 47	
Repairs and improvements,	4,034 42	
Farm, stable and grounds,	8,272 94	
		\$59,476 53
Food: —		
Butter,	\$6,494 71	
Butterine,	327 00	
Beans,	64 90	
Bread and crackers,	105 78	
Cereals, rice, meal, etc.,	895 05	
Cheese,	165 10	
Eggs,	8,393 02	
Flour,	2,099 28	
Fish,	2,496 50	
Fruit (dried and fresh),	2,799 68	
Meats,	40,452 41	
Milk,	9,959 01	
Molasses and syrup,	52 24	
Sugar,	1,980 76	
Tea, coffee, broma and cocoa,	1,057 23	
Vegetables,	3,960 83	
Sundries,	374 09	
		81,677 59
Furnishings: —		
Beds, bedding, table linen, etc.,	\$1,605 25	
Brushes, brooms,	311 00	
Carpets, rugs, etc.,	112 35	
Crockery, glassware, cutlery, etc.,	686 35	
Furniture and upholstery,	659 33	
Kitchen furnishings,	318 31	
<i>Amounts carried forward,</i>	\$3,692 59	\$141,154 12

<i>Amounts brought forward,</i>	\$3,692 59	\$141,154 12
Furnishings — <i>Con.</i>		
Wooden ware, buckets, pails, etc.,	139 47	
Sundries,	100 18	
	<hr/>	3,932 24
Heat, light and power: —		
Coal,	\$9,527 26	
Transportation of coal,	1,447 24	
Oil,	213 99	
Sundries,	319 01	
	<hr/>	11,507 50
Repairs and improvements: —		
Cement, lime and plaster,	\$283 20	
Doors, sashes, etc.,	72 87	
Electrical work and supplies,	513 00	
Hardware,	615 04	
Lumber,	1,261 85	
Machinery, etc.,	161 39	
Paints, oil, glass, etc.,	699 20	
Plumbing, steam fitting and supplies,	1,054 22	
Roofing and materials,	106 47	
Sundries,	205 82	
	<hr/>	4,973 06
Farm, stable and grounds: —		
Blacksmith and supplies,	\$183 90	
Carriages, wagons, etc., and repairs,	38 40	
Fertilizers, vines, seeds, etc.,	1,125 57	
Hay, grain, etc.,	4,236 99	
Harnesses and repairs,	25 40	
Horses,	425 00	
Other live stock,	158 00	
Tools, farm machines, etc.,	184 05	
Sundries,	167 85	
	<hr/>	6,545 16
Miscellaneous: —		
Books, periodicals, etc.,	\$97 15	
Chapel services and entertainments,	590 00	
Freight, expressage and transportation,	1,129 95	
Hose, etc.,	16 50	
Ice,	90 21	
Medicines and hospital supplies,	3,696 29	
Medical attendance, nurses, etc. (extra),	56 00	
Examination of applicants,	2,351 60	
Postage,	626 57	
Printing and printing supplies,	843 62	
Cuspidor supplies,	2,026 28	
Soap and laundry supplies,	1,446 98	
Stationery and office supplies,	764 90	
Travel and expenses (officials),	513 40	
Telephone and telegraph,	934 76	
Tobacco,	3 00	
Water,	2,436 39	
Sundries,	973 59	
	<hr/>	18,597 19
Total expenses for maintenance,		\$186,709 27

SPECIAL APPROPRIATIONS.

Balance Dec. 1, 1908,		\$6,489 42
Appropriations for fiscal year,		19,400 00
		<hr/>
Total,		\$25,889 42
Expended during the year (see statement annexed),	\$16,164 25	
Reverting to treasury of Commonwealth,	309 31	
		<hr/>
		16,473 56
		<hr/>
Balance Nov. 30, 1909,		\$9,415 86

RESOURCES AND LIABILITIES.

Resources.

Cash on hand,	\$4,276 29	
November cash vouchers (paid from advance money),	5,223 71	
Due from treasury of Commonwealth, account November, 1909, schedule,	6,573 94	
		<hr/>
		\$16,073 94

Liabilities.

Schedule of November bills,	\$16,073 94
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Special Appropriations.

ОБЪЕКТ.	Act or Resolve,	Whole Amount.	Expended during Fiscal Year.	Expended to Date.	Balance at End of Year.
Hospital for Consumptives loan fund,					\$280 30 ¹
New farmhouse,	Resolves 1906, Chapter 83,	\$3,500 00	\$49 38	\$3,500 00	—
Piggery,	Resolves 1906, Chapter 83,	500 00			31 ¹
Piggery,	Resolves 1907, Chapter 98,	500 00	4 00	999 69	
Grading,	Resolves 1907, Chapter 98,	500 00	71 60	499 36	64 ¹
Pavilion,	Resolves 1907, Chapter 98,	2,000 00	38 62	1,968 73	1 27 ¹
Piazas,	Resolves 1907, Chapter 98,	2,000 00	7 20	1,999 72	28 ¹
New cow barn,	Resolves 1908, Chapter 93,	9,000 00	3,270 09	8,998 62	1 38 ¹
Filter beds,	Resolves 1908, Chapter 93,	1,000 00	864 27	999 56	44 ¹
Hennery,	Resolves 1908, Chapter 93,	900 00	125 47	899 51	49 ¹
Hennery equipment and purchase of hens,	Resolves 1908, Chapter 93,	900 00	376 08	899 29	71 ¹
Metallic dry room,	Resolves 1908, Chapter 93,	700 00	—	680 00	20 00 ¹
Operating room and equipment,	Resolves 1908, Chapter 93,	1,000 00	997 63	997 63	2 37 ¹
Painting wards and outside work and roofs,	Resolves 1908, Chapter 93,	4,500 00	369 75	4,499 28	72 ¹
Repairs on outside walls,	Resolves 1908, Chapter 93,	2,000 00	6 20	1,999 78	22 ¹
Constructing and furnishing nurses' home,	Resolves 1909, Chapter 77,	15,000 00	7,296 93	7,296 93	7,703 07
Additional piazza,	Resolves 1909, Chapter 77,	2,000 00	597 23	597 23	1,402 77
Enlarging hennery,	Resolves 1909, Chapter 77,	1,000 00	999 82	999 82	18 ¹
Purchase of cows,	Resolves 1909, Chapter 77,	1,400 00	1,089 98	1,089 98	310 02
		\$48,400 00	\$16,164 25	\$38,955 13	\$9,415 86

¹ Reverting to treasury.

Respectfully submitted,

FREDERICK L. HILLS,

Treasurer.

Examined and found correct as compared with the records in the office of the Auditor of the Commonwealth.

WARREN A. MERRILL,

Assistant Supervisor of Accounts.

SUMMARY OF CURRENT EXPENSES.

Total expenditures,	\$186,709 27
Deducting extraordinary expense,	3,725 62
	<hr/>
	\$182,983 65
Deducting amount of sale of supplies,	3,724 72
	<hr/>
	\$179,258 93
Adding decrease of supplies:—	
1908 inventory,	\$11,249 62
1909 inventory,	8,994 54
	<hr/>
	2,255 08
	<hr/>
	\$181,514 01

Dividing this amount by the daily average number of patients, 341, gives an average annual cost of \$532.29, equivalent to an average weekly net cost of \$10.20 +

FARM ACCOUNT.

The farm account is as follows: —

DR.

Products of the farm on hand, as estimated Dec. 1, 1908, .	\$3,094 80
Blacksmith,	119 05
Board of men,	1,230 00
Coal,	136 00
Grain and feed for stock,	3,020 80
Harness repairs,	9 37
Labor,	6,635 36
Seed and fertilizer,	102 71
Sundries,	946 60
Tools and hardware,	69 51
Waste from sanatorium kitchen,	200 00
	\$15,564 20

CR.

Board of four driving horses, 12 months, at \$20 per month, .	\$960 00
Board of one driving horse, 5 months, at \$20 per month, .	100 00
Labor for sanatorium, putting in ice, hauling provisions from station, etc.,	1,459 56
Milk supplied, as per list following, 88,909½ quarts, at \$0.04½, .	4,000 94
Fruit and vegetables supplied, as per the following list, .	1,571 88
Beef supplied, as per list following,	63 65
Liver supplied, as per list following,	3 48
Pork supplied, as per list following,	263 90
Fertilizer supplied, as per list following,	27 00
Oats, hay and straw,	5 23
Sold, hogs,	2,360 08
Products of farm on hand, as estimated Dec. 1, 1909, per list following,	2,401 40
Stock on hand Dec. 1, 1909,	367 79
	\$13,584 91
Deficit against farm,	1,979 29
	\$15,564 20

PRODUCTS OF THE FARM DELIVERED TO THE SANATORIUM DURING THE
YEAR ENDING NOV. 30, 1909.

Apples, 12 barrels, at \$1.25 to \$1.75 per barrel, . . .	\$20 00
Apples, 2½ bushels, at \$1.25 to \$1.75 per bushel, . . .	1 45
Beans, shell 6½ bushels, at \$0.75 to \$1.00 per bushel, . . .	5 50
Beans, wax, 16 bushels at \$1.00 per bushel, . . .	16 00
Beef, 1,018½ pounds, at \$0.05½ to \$0.07 per pound, . . .	63 65
Beets, 184 bushels, at \$0.50 to \$1.25 per bushel, . . .	94 25
Cabbage, 2,589 pounds at \$0.04 per pound, . . .	103 56
Carrots, 18 bunches, at \$0.50 to \$1.00 per dozen bunches, . . .	1 50
Carrots, 202 bushels, at \$0.40 to \$0.60 per bushel, . . .	82 00
Cauliflower, 149 heads, at \$0.05 to \$0.07 per head, . . .	8 29
Celery, 11½ boxes, at \$0.25 to \$1.25 per box, . . .	3 95
Corn, 321 dozen, at \$0.12 per dozen, . . .	38 52
Cucumbers (large), 3,291, at \$3.00 to \$3.50 per hundred, . . .	74 75
Cucumbers (small), 8,476, at \$0.25 per hundred, . . .	21 19
Fertilizer, 9 loads, at \$3.00 per load, . . .	27 00
Hay, 50 pounds, at \$0.75 per hundred, . . .	38
Hogs, at \$0.07¼ to \$0.12 per pound, . . .	2,623 98
Leeks, 1,332 bunches, at \$0.25 to \$0.30 per dozen bunches, . . .	27 95
Lettuce, 288½ boxes, at \$0.20 to \$0.75 per box, . . .	120 70
Liver, 29 pounds, at \$0.12 per pound, . . .	3 48
Milk, 88,909½ quarts, at \$0.04½ per quart, . . .	4,000 94
Oats, 4 bushels, at \$0.65 per bushel, . . .	2 60
Onions, 206 bunches, at \$0.05 per bunch, . . .	10 30
Onions, 78 bushels, at \$0.60 to \$0.75 per bushel, . . .	47 70
Parsley, 14 pecks, at \$0.25 to \$0.30 per peck and bushel, . . .	1 72
Parsnips, 21 bushels, at \$0.50 per bushel, . . .	10 50
Pears, 4½ bushels, at \$2.00 per bushel, . . .	9 00
Peas, 17 bushels, at \$1.25 per bushel, . . .	21 26
Peppers, 4 bushels, at \$0.30 to \$0.40 per bushel, . . .	1 14
Potatoes, 743¾ bushels, at \$0.62 to \$0.90 per bushel, . . .	486 03
Radishes, 25½ bushels, at \$0.75 per bushel, . . .	13 63
Rhubarb, 731 pounds, at \$0.02 per pound, . . .	14 62
Squash, 11,518 pounds, at \$0.01 to \$0.02 per pound, . . .	136 88
Squash (summer), 1,656, at \$0.03 per pound, . . .	49 68
Straw, 300 pounds, at \$0.75 per hundred, . . .	2 25
Swiss chard, 152 bushels, at \$0.35 to \$0.50 per bushel, . . .	43 18
Tomatoes, 151½ bushels, at \$0.50 to \$1.00 per bushel, . . .	104 13
Turnips, 5 bushels, at \$0.50 per bushel, . . .	2 50

\$8,296 16

POULTRY DEPARTMENT.

CONSTRUCTION.

Appropriation (Resolves 1908, chapter 93), building,	.	\$900 00
Appropriation (Resolves 1908, chapter 93), equipment,	.	900 00
Appropriation (Resolves 1909, chapter 77), enlarging,	.	1,000 00
		<u>\$2,800 00</u>

EXPENDITURES.

Building: —

Lumber,	.	.	\$336 66
Roofing,	.	.	173 82
Hardware,	.	.	39 41
Water and steam fittings,	.	.	44 06
Labor,	.	.	287 36
Transportation,	.		18 20

\$899 51

Equipment: —

Furnishings,	.	.	\$46 53
Hardware,	.	.	10 58
Labor,	.	.	52 00
Poultry,	.	.	600 50
Feed and grain,	.	.	125 80
Sundries,	.	.	63 88

899 21

Enlarging: —

Lumber,	.	.	\$130 60
Hardware,	.	.	14 97
Roofing,	.	.	110 60
Labor,	.	.	376 60
Poultry,	.	.	359 85
Sundries,	.	.	7 20

999 82

2,798 62

Reverting to treasury, \$1 38

The following is a statement of the poultry department from its commencement, Oct. 1, 1908, to Nov. 30, 1909 : —

Maintenance.

Stock: —

Poultry,	\$960 35
Grain and feed,	125 80

\$1,086 15

Poultry,	\$158 00
Grain and feed,	1,289 52
Water,	2 80
Labor,	617 38
Repairs and improvements,	75 63
Sundries and board of employees,	437 13

2,580 46

\$3,666 61

Returns.

Eggs delivered to sanatorium,	\$1,726 83
Poultry delivered to sanatorium,	237 77
Fertilizer delivered to sanatorium,	43 75
Sundries,	2 00

\$2,010 35

Stock: —

Eggs,	\$6 76
Poultry,	814 73
Grain,	116 09
Sundries,	14 07

951 65

2,962 00

Difference,	\$704 61
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VALUATION.¹

Nov. 30, 1909.

Real estate:—

Land, number of acres, 365, valuation,	\$24,464 00
Buildings, valuation,	473,870 00
	<hr/>
Total real estate valuation,	\$498,334 00

Personal estate:—

Live stock on farm,	\$8,017 00
Produce of farm on hand,	2,230 25
Carriages and agricultural implements,	1,584 00
Machinery and mechanical fixtures,	1,950 00
Beds and bedding in inmates' department,	8,000 00
Other furniture in inmates' department,	1,750 00
Mission furniture,	7,500 00
Personal property of State in superintendent's department,	1,650 00
Ready-made clothing,	500 00
Dry goods,	2,497 61
Provisions and groceries,	1,207 59
Drugs and medicines,	950 00
Fuel,	875 00
Library,	1,000 00
Other supplies undistributed,	1,234 09
	<hr/>
Total personal estate valuation,	\$40,945 54
	<hr/>
Total valuation,	\$539,279 54

¹ See Revised Laws, chapter 84, section 7.

SPECIAL REPORT.

The following special report is prepared in accordance with a resolution of the National Conference of Charities and Corrections, adopted May 15, 1906: —

Population.

	Men.	Women.	Totals.
Number of patients present at beginning of fiscal year,	189	158	347
Number received during year,	411	372	783
Number discharged during year,	416	368	784
Number of deaths included in preceding item,	9	2	11
Number at end of fiscal year,	184	162	346
Daily average attendance (<i>i.e.</i> , number of inmates actually present) during year,	185	156	341
Average number of officers and employees during the year,	101	62	163

Expenditures.

Current expenses: —

1. Salaries and wages,	\$59,476 53	
2. Clothing,	—	
3. Subsistence,	81,677 59	
4. Ordinary repairs,	4,973 06	
5. Office, domestic and out-door expenses,	40,582 09	
		\$186,709 27

Extraordinary expenses: —

1. New buildings, land, etc.,	\$11,117 95	
2. Permanent improvements to existing buildings,	5,046 30	
		16,164 25

Grand total, \$202,873 52

LIST OF WAGES.

Superintendent and treasurer (per annum),	\$2,500 00
Physician (per annum),	1,500 00
Physician (per annum),	1,000 00
Physician (per annum),	900 00
Assistant physician (per annum),	400 00
Matron (per annum),	1,200 00
Steward (per annum),	1,200 00
Chief engineer (per annum),	1,200 00
Farmer (per annum),	900 00
Bookkeeper (per week),	8 05
Stenographer (per week),	9 21
Office assistant (per week) (without living),	6 90
Pharmacist (per week),	4 14
Nurses (per week),	\$6 90 to 9 21
Nurses (night) (per week),	9 21
Attendants (per week),	\$3 00 to 5 75
Night attendant (per week),	11 05
Dietitian (per week),	13 81
Assistant dietitian (per week),	5 75
Cook (per week),	19 56
Assistant cook (per week),	11 50
Baker (per week),	18 41
Supervisors (male) (per week),	\$5 75 to 9 21
Supervisor (female) (per week),	4 00
General work (per week) (male and female),	\$2 75 to 5 75
Storekeeper (per week),	9 21
Storeroom helpers (per week),	\$3 45 to 8 05
Engineer and fireman (per week),	13 81
Engineer (per week) (without living),	15 00
Firemen (per week),	\$6 90 to 8 05
Laundress (per week),	7 00
Laundry help (male) (per week),	\$3 25 to 7 00
Laundry help (female) (per week),	\$3 50 to 5 00
Kitchen help (per week),	\$3 45 to 6 90
Waiters (per week),	\$3 00 to 5 75
Waitress (per week),	3 45
Serving rooms (male) (per week),	\$3 45 to 4 40

Serving rooms (female) (per week),	.	.	.	.	\$3 25 to 6 50.
Diet kitchen girls (per week),	.	.	.	.	\$3 25 to 4 00
Expressman (per week),	.	.	.	.	6 44
Coachmen (per week),	.	.	.	.	\$3 45 to 6 90
Farm help (per week),	.	.	.	.	\$4 60 to 6 44
Farm help (without living) (per day),	.	.	.	.	\$1 75 to 2 00
Poultry manager (per week),	.	.	.	.	6 90
Carpenters (without living) (per day),	.	.	.	.	\$2 70 to 3 00
Carpenter (per week),	.	.	.	.	7 00

STATISTICAL TABLES.

STATISTICAL TABLES.

TABLE I. — *Admissions and Discharges.*

	Men.	Women.	Totals.
Number of patients in sanatorium Dec. 1, 1908, .	189	158	347
Number admitted Nov. 30, 1908, to Dec. 1, 1909,	411	372	783
Number discharged Nov. 30, 1908, to Dec. 1, 1909,	416	368	784
Number of deaths (included in preceding item), .	9	2	11
Number remaining in sanatorium Nov. 30, 1909, .	184	162	346
Daily average number of patients,	185	156	341

TABLE II. — *Monthly Admissions and Discharges, with Average Monthly Population.*

DATE.	ADMITTED.		DISCHARGED.		Daily Average.
	Men.	Women.	Men.	Women.	
1908.					
December,	29	28	28	29	341
1909.					
January,	28	22	37	22	345
February,	25	25	19	30	342
March,	33	31	37	26	342
April,	43	42	39	41	340
May,	54	29	56	37	338
June,	29	34	30	34	339
July,	28	27	30	19	340
August,	41	33	38	36	338
September,	35	41	35	36	340
October,	32	25	30	33	345
November,	34	35	37	25	343
Total,	411	372	416	368	—

TABLE III. — *Distribution of Examinations.*

PLACE OF EXAMINATION.	Number.
Boston, Massachusetts General Hospital, . . .	1,678
Rutland,	247
Worcester City Hospital,	184
Fall River,	132
Lowell,	89
Springfield,	71
Pittsfield,	59
Northampton,	42
Greenfield,	15
Worcester, Hahnemann Hospital,	3
Total,	2,520

TABLE IV. — *Residence of Patients admitted.*

COUNTIES.	Men.	Women.	Totals.
Suffolk,	136	115	251
Middlesex,	61	63	124
Essex,	50	36	86
Worcester,	57	66	123
Bristol,	35	27	62
Plymouth,	22	15	37
Norfolk,	8	11	19
Hampden,	16	12	28
Berkshire,	14	14	28
Hampshire,	4	4	8
Franklin,	8	7	15
Barnstable,	—	2	2
Totals,	411	372	783

TABLE V. — *Nativity of Patients admitted.*

BORN IN —	Men.	Women.	Totals.	BORN IN —	Men.	Women.	Totals.
United States, .	297	258	555	Sweden, .	11	6	17
Austria, .	2	—	2	New Brunswick,	2	4	6
Canada, .	12	14	26	Province of			
Cape Breton, .	2	—	2	Quebec, .	—	1	1
Denmark, .	2	—	2	South Africa, .	—	1	1
England, .	10	6	16	Prince Edward			
Germany, .	3	—	3	Island, .	2	—	2
Ireland, .	24	31	55	Western Islands,	1	1	2
Italy, .	3	2	5	Portugal, .	—	1	1
New Foundland,	1	5	6	Bohemia, .	—	1	1
Norway, .	2	—	2	Armenia, .	2	1	3
Nova Scotia, .	4	16	20	Switzerland, .	1	—	1
Poland, .	1	—	1				
Russia, .	24	23	47	Totals, .	411	372	783
Scotland, .	5	1	6				

TABLE V. — *Nativity of Patients admitted — Concluded.*

FATHERS BORN IN —	Men.	Women.	Totals.	FATHERS BORN IN —	Men.	Women.	Totals.
Austria, .	1	—	1	Scotland, .	4	4	8
Canada, .	16	14	30	Sweden, .	3	4	7
Cape Breton, .	1	—	1	Wales, .	1	—	1
England, .	14	16	30	New Brunswick,	2	5	7
Germany, .	9	11	20	Prince Edward			
Ireland, .	76	59	135	Island, .	3	2	5
Italy, .	3	—	3	Western Islands,	1	—	1
New Foundland,	2	—	2	Portugal, .	1	—	1
Norway, .	2	—	2	West Indies, .	—	1	1
Nova Scotia, .	10	7	17				
Russia, .	3	6	9	Totals, .	152	129	281

TABLE VI. — *Civil Condition of Patients admitted.*

	Men.	Women.	Totals.
Single,	157	161	318
Married,	247	191	438
Widowed,	7	19	26
Divorced,	—	1	1
Totals,	411	372	783

TABLE VII. — *Age of Patients admitted.*

	Men.	Women.	Totals.
14 to 20 years,	68	77	145
20 to 30 years,	177	157	334
30 to 40 years,	117	97	214
40 to 50 years,	39	36	75
Over 50 years,	10	5	15
Totals,	411	372	783

TABLE VIII. — *Occupations.*

	Men.	Women.		Men.	Women.
Actor,	—	1	Candy maker,	1	—
Attendants,	4	1	Canvassers,	2	1
Baggage master,	1	—	Carpenters,	2	—
Barber,	1	—	Cash girl,	—	1
Bartenders,	5	—	Cashier,	—	1
Blacksmiths,	3	—	Chauffeurs,	2	—
Boiler maker,	1	—	Chemist,	1	—
Bookbinders,	3	1	Cigar makers,	3	—
Bookkeepers,	5	7	Clerks,	47	14
Bottler,	1	—	Cloth examiner,	1	—
Bowling alley,	1	—	Coachman,	1	—
Brakemen,	3	—	Conductor, railroad,	1	—
Bundle girl,	—	1	Conductors, street rail- way,	6	—
Butchers,	2	—	Cooks,	1	1
Cabinet makers,	4	—	Cooper,	1	—

TABLE VIII. — *Occupations* — Continued.

	Men.	Women.		Men.	Women.
Dentist,	1	—	Iron molders,	2	—
Designer,	1	—	Janitors,	2	—
Domestics,	—	11	Laborers,	20	—
Draughtsman,	1	—	Lamplighter,	1	—
Dressmakers,	—	2	Laundry,	1	1
Electricians,	5	—	Lawyer,	1	—
Elevator boy,	1	—	Leather workers,	2	1
Engineers, locomotive,	2	—	Letter carrier,	1	—
Engineer, marine,	1	—	Librarians,	—	2
Engineer, stationary,	1	—	Longshoreman,	1	—
Engravers,	2	—	Machinists,	23	—
Druggists,	2	—	Manager,	1	—
Factory,	50	46	Mason,	1	—
Farmers,	5	—	Matron,	—	1
Fireman, railroad,	1	—	Meat cutter,	1	—
Fishermen,	2	—	Mechanics,	3	—
Fish cutters,	2	—	Metal workers,	3	—
Foremen,	7	—	Milliners,	—	2
Gardeners,	2	—	Minister,	1	—
Grocer,	1	—	Motormen,	3	—
Hackmen,	2	—	Musician,	1	—
Housewives,	—	155	Newspaper reporter,	1	—
Housework,	—	26	No work,	1	6
Insurance,	1	—	Nursemaid,	—	1

TABLE VIII. — *Occupations* — Concluded.

	Men.	Women.		Men.	Women.
Nurses, student, . . .	—	2	Shoe shop, . . .	25	15
Nurses, trained, . . .	1	2	Station agent, . . .	1	—
Packers, . . .	1	1	Steam fitter, . . .	1	—
Painters, . . .	10	—	Stenographers, . . .	5	6
Paper hanger, . . .	1	—	Steward, . . .	1	—
Pedlers, . . .	5	—	Stone cutter, . . .	1	—
Photographers, . . .	1	1	Students, . . .	23	17
Physician, . . .	1	—	Tailors, . . .	7	—
Piano tuner, . . .	1	—	Teachers, school, . . .	—	10
Policemen, . . .	3	—	Teamsters, . . .	15	—
Polisher, . . .	1	—	Telegraph operators, . . .	2	—
Porter, . . .	1	—	Telephone operators, . . .	—	3
Priest, . . .	1	—	Tinsmith, . . .	1	—
Printers, . . .	4	2	Tobacco stripper, . . .	—	1
Rodman, . . .	1	—	Tool makers, . . .	2	—
Sailor, . . .	1	—	Trunk maker, . . .	1	—
Salespeople, . . .	13	6	Upholsterer, . . .	1	—
Seamstresses, . . .	—	12	Waiters, . . .	4	11
Shippers, . . .	4	—	Weigher, . . .	1	—
Shoe cutters, . . .	7	—	Totals, . . .	411	372

TABLE IX. — *Classification of Results (National Association Classification).*

	INCIPIENT.				MODERATELY ADVANCED.				FAR ADVANCED.				TOTALS.			
	Men.	Women.	Totals.	Per Cent.	Men.	Women.	Totals.	Per Cent.	Men.	Women.	Totals.	Per Cent.	Men.	Women.	Totals.	Per Cent.
Apparently cured, . . .	61	64	125	61.57	26	17	43	12.61	—	—	—	—	87	81	168	25.77
Arrested, . . .	22	30	52	25.61	98	49	147	43.11	12	4	16	14.81	132	83	215	32.97
Improved, . . .	4	18	22	10.83	53	59	112	32.84	18	26	44	40.74	75	103	178	27.30
Not improved, . . .	1	3	4	1.97	18	21	39	11.43	25	23	48	44.44	44	47	91	13.95
Totals, . . .	88	115	203	31.13	195	146	341	52.30	55	53	108	16.56	338	314	652	—

TABLE X. — *Comparison of Percentages since the Adoption of National Association Classification.*

INCIPIENT CASES.	1905.	1906.	1907.	1908.	1909.
Apparently cured, .	39.2	50.4	56.1	33.0	61.57
Arrested, . . .	46.7	40.1	26.8	46.5	25.61
Improved, . . .	12.0	8.9	16.3	17.3	10.83
Not improved, . .	2.0	.6	.7	3.0	1.97

TABLE XI. — *Number of Patients having Hæmoptysis.*

	Men.	Women.	Totals.
Hæmoptysis prior to admission, . . .	150	124	274
Hæmoptysis in sanatorium, . . .	55	54	109
Totals,	205	178	383

Per cent. of cases with record of hæmoptysis: before entrance, 42; in sanatorium, 16.

TABLE XII. — *Deaths, Duration of Disease, Length of Stay in Sanatorium and Cause of Death.*

No.	Duration.	Stay.	Cause of Death.
6839	1 month, .	10 days, . . .	Pneumonia.
6829	5 months, .	9 days, . . .	Tumor of the brain.
6603	2 months, .	5 months, 12 days, .	Tubercular pneumonia.
6677	2 years, .	10 months, 16 days, .	Pneumothorax.
6371	Unknown, .	4 months, 4 days, .	Pulmonary tuberculosis, Tubercular enteritis.
6051	Unknown, .	9 months, 19 days, .	Pulmonary tuberculosis.
6673	16 months, .	1 month, 14 days, .	Pulmonary tuberculosis, Hæmoptysis.
6768	6 months, .	1 month, 21 days, .	Pulmonary tuberculosis.
6735	5 months, .	2 months, 14 days, .	Miliary tuberculosis.
6500	Unknown, .	7 months, 20 days, .	Pneumothorax.
7118	7 years, .	14 days, . . .	Miliary tuberculosis.

TABLE XIII. — *Admissions and Discharges from the Beginning of the Sanatorium.*

	Number.	Per Cent.
Admitted, ¹	7,356	—
Discharged,	7,010	—
Not considered,	1,405	—
Considered,	5,605	—
Arrested and apparently cured,	2,591	46.22
Improved,	2,454	43.78
Not improved,	560	9.99
Died,	59	—

¹ Including 8 patients discharged for surgical treatment elsewhere and readmitted under original number.

Climatological Data, Massachusetts State Sanatorium, Rutland, Altitude, 1,160 Feet, for the Official Year beginning Dec. 1, 1908, and ending Nov. 30, 1909.

DATE.	Mean Temperature.	Clear Days.	Partly Cloudy Days.	Cloudy Days.	Days with Rain or Snow.	Precipitation ¹ (Rain in Inches and Hundredths).	Precipitation ² (Snow in Inches and Hundredths).	Total Wind Movement (Miles).	Wind Average per Hour (Miles).	Mean Relative Humidity (Per Cent.).
1908.										
December, .	25.4	15	5	11	11	3.32	7.25	7,644	10.3	75.1
1909.										
January, .	23.7	13	4	14	16	3.28	10.65	7,803	11.6	81.5
February, .	25.8	15	6	7	16	6.37	14.01	8,039	12.0	74.4
March, .	30.0	14	8	9	16	5.05	14.65	7,973	10.7	68.2
April, .	42.8	15	6	9	17	6.51	.45	8,727	12.1	66.7
May, .	53.2	14	12	5	13	2.28	—	7,625	10.2	68.8
June, .	65.2	19	8	3	9	3.21	—	6,739	9.4	64.6
July, .	66.7	18	11	2	9	5.18	—	6,518	8.8	68.3
August, .	65.1	20	6	5	7	4.11	—	5,517	7.3	69.8
September, .	59.0	14	5	11	14	3.59	—	5,844	8.1	80.1
October, .	47.7	20	6	5	10	1.73	—	6,528	8.8	68.8
November, .	40.6	12	8	10	9	2.16	2.60	7,813	10.8	70.1
Totals, .	545.2	189	85	91	147	46.79	49.61	86,770	120.1	856.4
Averages, .	45.4	15.8	7.1	7.6	12.2	3.90	8.27	7,231	10.0	71.4

¹ Includes rain, melted snow and hail.

² Average taken from months with snow only.

